

ON SOME OF THE LIMITS OF THE ART OF SURGERY.

Delivered at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY N. SENN, M.D., Ph.D., LL.D.

PROFESSOR OF PRACTICE OF SURGERY AND CLINICAL SURGERY IN RUSH MEDICAL COLLEGE; ATTENDING SURGEON PRESBYTERIAN HOSPITAL; SURGEON-IN-CHIEF ST. JOSEPH'S HOSPITAL.

Mr. President and Members of the American Medical Association:—Modern surgery has attained a degree of development which entitles it to the distinction of a science and an art. As a science surgery is of recent date, having been founded and perfected during the last half of the present century. As an art it has been practiced for centuries by our ancestors with credit to themselves and benefit to the injured, the crippled and the sick. When Boyer wrote the introduction to his classic work on surgery he expressed the conviction that surgery had reached perfection. How little did he dream of the great changes that would be wrought in the practice of his cherished profession by the progressive pathologists and surgeons of the next few generations! How innocent and absurd does such a statement appear in the face of the labors of such men as Virchow, Rokitansky, Rindfleisch, Klebs, Recklinghausen, in pathology; Pasteur, Koch, Ogsten, Rosenbach, Baumgarten, in bacteriology; Lister, Langenbeck, Billroth, Hueter, Esmarch, Czerny, Gussenbauer, Nélaton, Verneuil, Terrier, Macewen, Gross, Agnew, in surgery; Terrier, Hitzig, Horsley, in cerebral localization; Spencer, Wells, Keith, Winckel, Martin, Péan, Ségond, Pozzi, Sims, Emmet, Battey, in gynecology, and a host of other faithful unselfish workers who have made surgery what it is to-day and what it is intended to be, the most honored, respected and beneficent branch of the healing art. What a contrast between the standing of the surgeon of to-day in the community, the profession and from a scientific aspect as compared with his colleagues of only a century ago! It is not long since the art of surgery was limited to bleeding, cupping, leeching, setting of a broken limb, reducing a dislocation, stanching hemorrhage, opening an abscess or amputating a limb for injury or disease beyond the reach of conservative measures. He was the subordinate, almost slave, of the pompous, arrogant and self-confident physician of that time. He subsisted from the crumbs that fell from time to time from his master's table. The betterment in the standing and sphere of the members of the surgical craft during the last century is entirely due to the enormous progress that has been made in the science and art of surgery. During this time the legitimate field of medicine has gradually diminished before the advancing columns of progressive and aggressive surgeons. The physician no longer has a monopoly over the diseases of all the internal organs. The physician's distinctive apparel and gold-headed cane of but few years ago no longer intimidate the surgeon; they have disappeared from the scene and the surgeon stands on the same level, if not higher, in every respect with the physician in the eyes of the masses and the estimation of the scientific world. Modern pathology and the new science of bacteriology have laid a permanent foundation for the steady and progressive advance of surgical thought and work. The inflammatory complications of wounds and the etiology of most of the chronic infective surgical diseases have been cleared up by bacteriologic investigations during

the last twenty-five years, and the knowledge thus gained has enabled the surgeon to prevent in a large measure the former and to treat intelligently and with increased success the latter. Many of the most noted surgeons who have left a strong and permanent impression on surgical literature and practice during the last quarter of a century have been enthusiastic and practical bacteriologists and competent pathologists. The wonderful development of operative surgery during the same time is one of the earliest and richest fruits reaped from the vast and fertile field sown and cultivated by bacteriologists of every civilized nation. To the immortal Lister belongs the honor of having opened a systematic and successful crusade against the surgeon's most treacherous enemies—the pathogenic microbes. The great principles which he conceived and introduced into practice created a new era in surgery. Antiseptic surgery is one of the many fruits of his genius and the one, to whom we as a profession and humanity owe more than to any other surgeon dead or living, has been permitted to live long enough to see the creation and blessings of aseptic surgery, the handiwork of his innumerable enthusiastic followers. Antiseptic and aseptic surgery have smoothed the rough and rugged pathway of the practical surgeon. Ordinary cleanliness has given way to surgical cleanliness. The almost universal introduction of antiseptic and aseptic precautions in the treatment of wounds in private and hospital practice has nearly eradicated the three greatest enemies of the surgeon of old, namely, hospital gangrene, erysipelas and secondary hemorrhage, and minimized the occurrence of suppuration and its manifold immediate and remote complications.

No wonder that a sense of security created by such wonderful changes made the surgeons bold. In consequence of such revolutionary changes wrought in the practice of surgery new territories were invaded and organ after organ, the seat of injury or disease, were subjected to direct surgical intervention. Step by step the scalpel found its way into localities where formerly the physician had reigned alone and supreme, and where its presence would have been regarded by him as convincing proof of homicidal intent. No better evidence can be advanced to show the difference in the kind and scope of work of the surgeon of to-day with the one before the pre-antiseptic time than a comparison between the works of operative surgery of now and then. The sense of safety which took possession of the surgeon and an earnest desire to extend his skill to the successful treatment of affections which had heretofore baffled the efforts of the physician, brought on a warfare on almost every organ the seat of real or imaginary disease. The physician found himself suddenly out of his long time honored routine practice. The specialists utilized the opportunity and left no stone unturned to extend their sphere of activity. Brain surgeons, abdominal surgeons, neck surgeons appeared on the scene and filled the medical press with accounts of their wonderful surgical feats. The old-fashioned gynecologist, whose chief occupation consisted in introducing and removing pessaries, cauterizing so-called ulcers of the cervix, swabbing out the uterus and inserting medicated vaginal tampons, became restless and anxious to exchange harmless, bloodless measures for the knife and scissors. His desire for bloody operations was not satisfied by sewing lacerations of the cervix and perineum. He felt that in order to keep abreast with the spirit of the



LIBRARY
SURGEON GENERAL'S OFFICE

JAN 22-1896

ball

present age he must increase his range of action, and in due course of time the ovaries, the Fallopian tubes and uterus became the theater of his aggressiveness. Even the acquisition of this additional territory did not satisfy his ambition. The adjoining great abdominal cavity, with its many important organs was looked upon with a jealous eye and it has been made the common camping ground of the general surgeon and the gynecologist for several years.

The throat and nose specialist, under the same influences, became disgusted with his brush, powder-blower and atomizers; sharp spoons, chisels and saws came into requisition, and the number of deflected septa, hypertrophic turbinated bones and third tonsil increased alarmingly and were attacked most energetically. The rectal specialist, who made a modest living by stretching the sphincter ani and ligating piles, saw a fortune in adding to his limited sphere of activity, resection of the rectum, and later, emboldened by his efforts carried his crusade to the topmost limits of the large intestine. The average orthopedist is no longer satisfied to correct deformities by the use of bloodless manual and mechanical measures; he has acquired a fondness for the knife, saw and chisel, so as not to be left behind in the procession. The genito-urinary surgeon has become tired of treating gonorrhea, strictures and syphilis; he can see no reason why he should not cut for stone, extirpate kidneys and perform plastic operations on the ureters.

The *furor operativus* manifested in these and other special departments of surgery, and its obvious results, render the standing and legitimate scope of the general surgeon very uncertain and indefinite at the present time. Let the general surgeon turn to the right or to the left, advance or retreat and he finds himself on reserved territory. As for the physician, he is expected to answer night calls, prescribe for diarrhea and whooping cough, watch cases of typhoid fever, measles, scarlatina and smallpox, and should complications arise and he does not report to the proper authority he renders himself liable to censure. Much of this ill-applied energy in the surgical world has resulted in detriment to patients and in retarding actual surgical progress. Operative surgery has been carried to extremes. A calm inspection of the ground that has been gone over will show "Some of the Limits of the Art of Surgery," the subject which I have chosen for this address.

Antisepsis and Asepsis.—The marvelous reduction in the mortality following injuries and operations which the present generation has witnessed is largely due to the prevention of wound complications by the employment of efficient antiseptic and aseptic precautions. Improved means of hemostasis and the more efficient treatment of shock might reasonably claim a certain share in bringing about such a desirable change in the results of surgical practice, but what has made our work more satisfactory and the statistics of various operative procedures more encouraging is the prevention of infection, the protection of the patient against the immediate and remote effects of sepsis and suppuration. The treatment of wounds with these objects in view has been simplified and rendered more efficient from year to year, but it can not be said that perfection has been reached. We are not yet in possession of an ideal absorbable ligature and suture material. The person who will show us how to prepare the animal ligature and suture in such a way that it will not only be absolutely aseptic but

also antiseptic and without loss of its tensile strength, will be entitled to the lasting gratitude of the entire profession. The disinfection of hands and field of operation is open to future improvement. The important matter of drainage remains in anything but a satisfactory condition and the questions frequently raised, when to drain and how to drain, must be definitely settled by future experience and research. There are surgeons to-day who do not take into account the possible failure of antiseptic and aseptic precautions in estimating the dangers incident to operative procedures. Have we not all heard so-called abdominal surgeons say that an exploratory laparotomy is devoid of danger? Is it not a fact that the abdomen is being opened daily by men who have not the faintest idea of what they may have to do, simply because they regard such a step as harmless and free of danger and the shortest and easiest way to make a diagnosis? To say that such a blind confidence in the efficiency and safety of aseptic precautions is not in accord with the work of the conscientious surgeon is to put it mildly. It is fortunate for the patients of such ever-ready and self-confident operators that the peritoneum under ordinary circumstances can dispose of more pathogenic microbes without harm resulting than any other tissue of the body. If it were not such a serious matter it would be amusing to see how such men explain an occasional death that occurs in their practice in cases where it was least expected. If, perchance, a post-mortem examination was held, the first statement made is that the peritoneum showed no evidences of inflammation, consequently death must have occurred in consequence of shock, exhaustion, bronchitis, edema of the lungs, or heart failure. Very recently a prominent surgeon in giving his testimonial in recommending a certain kind of catgut, made the statement that he had performed one hundred consecutive major operations without having seen a single drop of pus. I have no reason to doubt the veracity of this gentleman's statement, but I am firmly convinced that it would be difficult, if not impossible, to duplicate such an experience in the practice of the average general surgeon.

I have made it a duty on my part to familiarize myself with the advances made in the technique of aseptic surgery and have the good fortune to perform all my operations in two of the best hospitals in Chicago and in a fairly well equipped college clinic, and yet I am only too willing to confess that I never finish my day's work without seeing pus. I have a painful recollection of two amputations for carcinoma of the breast on private patients, in both of which every possible precaution was carried out, and yet to my utmost disappointment, both of them died of the most virulent form of sepsis I ever encountered. To offset these cases I might refer to perhaps over two hundred similar operations in which, under much less rigid precautions, with few exceptions, faultless wound healing was obtained. I remember, too, a case of genu valgum in an adult treated by transcondyloid osteotomy under strict antiseptic precautions, where the operation was followed by violent suppurative osteomyelitis and extensive necrosis which for a long time seriously threatened the limb and life of the patient. I am sure that I am not alone in relating such experiences. Every surgeon is occasionally humiliated by such mishaps and here is the proper place to make open confessions. The careless, reckless remark so often made by men who ought to know better, that

the surgeon who understands his business can make and treat wounds which, if dressed properly, will heal without suppuration, has reached the ears of the legal profession and has already entangled many a worthy and honest member of our profession in the complicated and trying machinery of the law. I envy the surgeon who has implicit confidence in this or that method of preventing wound infection, but I am confident that I but voice the sentiment of the vast majority of surgeons by making the statement that one of the limits of the art of surgery at the present time is the inadequacy of our available resources in furnishing wounds, even under the most favorable circumstances, absolute protection against infection.

Phlegmonous Inflammation.—The employment of antiseptic and aseptic precautions in the treatment of intentional and accidental wounds has greatly diminished the frequency of progressive phlegmonous inflammation and its often disastrous consequences. That such an occurrence can not always be prevented, even by the most scrupulous care and attention to details, every surgeon of experience is willing to admit. In the most virulent forms of phlegmonous inflammation the most heroic and timely treatment, local and general, is often fruitless in averting speedy death. In the most desperate cases the surface lesion is often insignificant, the infection following the lymphatic pathways, soon reaches the general circulation resulting in death from acute sepsis before any decided gross pathologic lesions have appeared at the seat of infection or in any of the internal organs. How rapidly general infection may take place has been shown by the experiments of Schimmelbusch, who found microorganisms in the spleen five to ten minutes after infection of a wound. Colin and Niessen demonstrated by their experimental work that amputation a few minutes after inoculation, of the ears and limbs of rabbits with pure cultures of anthrax, did not protect the animals against generalization of the disease. Such cases in the human being fortunately are seldom met with, but when they do occur, the art of surgery is powerless in arresting the progress of the disease. Parenchymatous injections of solutions of carbolic acid or corrosive sublimate along the course of the inflamed lymphatics, and the internal use of alcohol in heroic doses promise the most, but in the great majority of cases the extension of the infection continues and terminates speedily in death from general sepsis. Whether bacteriology will furnish us with a more potent weapon in the treatment of such cases the future must determine. When the infection has resulted in suppuration the old adage *ubi pus ibi incisio* remains as true to-day as before the microbic origin of pus was known. In the treatment of diffuse phlegmonous processes it is now customary to make free incisions, establish free drainage and disinfect the cavity by flushing it freely with a safe and yet efficient antiseptic solution, such as a saturated solution of acetate of aluminum, a 3 per cent. solution of carbolic acid or a 1:5,000 solution of corrosive sublimate and apply to the part hot compresses wrung out of the same solution. A few years ago Helferich advised laying open of the entire cavity by a single incision, recently Kocher pleads in favor of small incisions for the reason that pus microbes multiply more rapidly when freely supplied with oxygen. I believe the best treatment is half way between these two extremes, that is, multiple incisions large enough to insert drains the size of the little finger with a view

of establishing a perfect system of drainage. We can not expect much from a single disinfection. In severe cases in which life is threatened by sepsis I invariably resort to continuous irrigation with a saturated solution of acetate of aluminum, a non-toxic and yet very efficient antiseptic agent. The inflamed part should be immobilized and maintained in an elevated position until the inflammatory edema has subsided. The same treatment yields the most happy results in the treatment of acute suppurative inflammation of the large joints. One of the great shortcomings of the art of surgery to-day is the lack of measures to deal more efficiently with progressive suppurative affections and secure for suppurative cavities an aseptic condition in a shorter and more direct way. In cases of circumscribed abscesses it is generally believed that the sooner the incision is made the more prompt will be the relief and the more speedy the cure. Clinical experience has not confirmed these expectations. The old surgeons applied emollient poultices until the abscess became soft before they used the bistoury. No modern surgeon has any use for the filthy germ-breeding poultice, for which he has substituted the antiseptic, moist, hot compress which answers the same purpose, as it furnishes the necessary heat and moisture, and at the same time prepares the surface for the incision. We are, however, almost as powerless as our forefathers in limiting, much less aborting, a suppurative inflammation. One of the greatest and most useful innovations in surgery would be a remedy, local or general, which would enable us to abort the process of destruction after the classical symptoms which characterize suppurative inflammation have set in. We must look to bacteriology to fill up this most important gap.

Acute Suppurative Osteomyelitis.—Closely allied to phlegmonous inflammation of the soft tissues is acute suppurative osteomyelitis as it is caused by the same kind of microbes and results in more or less extensive destruction of tissue. The etiology and pathology of this disease are now well understood and upon them is based the early operative treatment which is generally endorsed by the profession at the present time. The danger from general sepsis is greater in the more serious forms of osteomyelitis than a similar affection of the soft tissues owing to the location of the primary focus of infection and the frequency with which the adjacent large joints become implicated during the progress of the disease. The early removal of the osteomyelitic product by operative interference as a rule relieves pain promptly, limits necrosis, guards against joint complications and minimizes the danger from general sepsis. Immobilization of the affected limb in proper position and the exposure of the osteomyelitic focus by the use of the chisel or gouge as soon as a positive diagnosis can be made are the modern resources which have succeeded in greatly reducing the mortality of this disease as well as its immediate complications and remote consequences. There are, however, cases of acute osteomyelitis in which the earliest intervention of the art of surgery is powerless in preventing death from general sepsis. These are the cases of osteomyelitis in which simultaneously or in rapid succession a number of the long bones become involved and where the local signs and symptoms are overshadowed by the general symptoms which point to a progressive sepsis and which are so seldom favorably influenced by either local or general treatment.

Tuberculosis of Joints.—Only a few years ago the surgeons who paid special attention to diseases of the joints were enthusiastic advocates of early resection or arthrectomy in cases of tubercular joint affections. Typical resections were made regardless of the anatomical location or the extent of the disease. It was believed that such medical treatment would succeed in eliminating the local affection and in preventing the extension of the infection to distant organs by reinfection from the peripheral focus. Statistics prove that these hopes are unfounded and conscientious and thinking surgeons have substituted largely in place of operative treatment conservative measures. The surgeon forgets too often that tuberculosis of joints seldom appears as a primary affection but as a rule appears as a peripheral manifestation of the existence of an antecedent perhaps undiscoverable tubercular affection of another organ, hence the removal of the accessible tubercular product does not necessarily protect the patient against tuberculosis of other joints or organs or general miliary tuberculosis. It is on the other hand a familiar clinical fact that the operative treatment of joint tuberculosis has not infrequently been followed by tuberculosis of other organs or general miliary tuberculosis. The short-comings of the art of surgery are well brought forward in the treatment of tubercular joints. In large clinics where but a few years ago resection of joints for tuberculosis was a daily occurrence such operations are now rarely witnessed. This change in practice is largely due to the beneficial effects obtained from intra-articular and parenchymatous injections of iodoform glycerin injections. I have resorted to this treatment in hundreds of cases with the most satisfactory results. In about one-half or two-thirds of all cases of uncomplicated joint tuberculosis this treatment proves curative. It is of special value in the treatment of tubercular abscesses in communication with a tubercular joint or bone. From one to three or four injections usually suffice in obliterating the abscess cavity. The tapping and injection must be done under the strictest antiseptic precautions lest the operation will aggravate the case, perhaps render it hopeless, by becoming the direct cause of a mixed infection with pus microbes. As some persons are peculiarly susceptible to the toxic action of iodoform the minimum dose two drachms of a 10 per cent. emulsion should be used in the beginning. In cases complicated by renal affections this caution should be increased as any affection of the kidneys retards the elimination of the iodoform and thus increases the danger from intoxication. Another important precaution in tapping a tubercular abscess is not to puncture the skin where it is thin and cyanotic as when it is made in such a place the puncture is very liable to give rise to a fistulous opening and consequently increased risk of infection with pyogenic microbes. The puncture must be made through normal skin, if need be some distance from the abscess, and after removal of the canula it should be sealed with iodoform collodium and a small pledget of sterile cotton. Immobilization of the limb or part thus treated is often useful but not always necessary. During the process of repair initiated by the iodoform injections the capsule of the joint often undergoes great contraction which if not counteracted by an appropriate mechanical support may result in a deformity difficult of correction short of operative interference. In cases of joint tuberculosis in which this treatment does not succeed in effecting

a cure it will prove to be the best possible preliminary treatment to a successful arthrectomy or atypical resection. Iodoform is absolutely useless in the treatment of tubercular affections complicated by suppuration. The antibacillary effect of iodoform in such cases only asserts itself after the pyogenic product and its causes have been eliminated by operative measures or chemical disinfectants or by a combination of these two antiseptic resources. In cases in which the iodoform treatment fails or in which it is contraindicated, arthrectomy and atypical resection have been largely substituted for typical resection.

Malignant Tumors.—The imperfections of the art of surgery become very apparent in the treatment of far-advanced malignant disease of any part or organ. The essential cause of carcinoma and sarcoma remains to be discovered. The science of surgery must first divulge the true nature of tumors before we can expect a decided advance in their more successful treatment. The essential features of the modern treatment of malignant tumors may be summed up very briefly as follows: Operate early and thoroughly. The treatment of unoperable sarcoma by injections of the sterilized toxins of the streptococcus of erysipelas and the bacillus prodigiosus has not filled the expected results. In my paper on this subject read in the Surgical Section of this Association at the last meeting I gave the results of my experience with this treatment. An additional experience since that time only confirms my views expressed at that time concerning the utter lack of curative power of these toxins in the treatment of genuine cases of sarcoma. The microscope is no infallible means of diagnosis in differentiating between small round celled sarcoma and some of the granulomata. The curative effect of a remedy can not be established unless an absolutely correct diagnosis can be made of the disease in the treatment of which it is employed. The discovery of some remedy, which by its local or general action would correct erratic cell growth and transform embryonic into mature cells might possibly change malignant into benign tumors and by doing so deprive them of their malignant clinical tendencies. Experimental researches in this direction might possibly lead to a rational treatment of malignant tumors short of a resort to the knife or caustics. At the present time the surgeon's resources in the treatment of malignant tumors are largely limited to an early and thorough use of the knife. Every surgeon deplors the fact that with the exception of carcinoma of the lip or of parts similarly exposed the patients who apply to him for surgical treatment with few exceptions are suffering from malignant tumors which extend beyond the organ primarily affected and have given rise to regional dissemination, general metastasis or both. For instance, of the over 200 cases of carcinoma of the breast which have come under my own observation I remember only one case in which during the operation, the axillary glands were found unaffected and in this case the columnar celled carcinoma, the size of a pea, had obstructed a duct, in consequence of which a retention cyst the size of a walnut developed, for which the patient applied for treatment. In cases of carcinoma of the uterus that come to me for examination and treatment, I find that only one out of every eight or ten cases is a proper case for a radical operation. In more than one-half of my cases of carcinoma of the rectum I refuse extirpation of the affected organ, and advise in its place an inguinal colostomy, because the disease has extended

to the pelvic connective tissue, the retro-peritoneal lymphatic glands or adjacent organs. Of eighteen cases of pyloric carcinoma of the stomach subjected to operative treatment, I found the disease limited to the part primarily affected only in one case; in the remaining cases the disease had extended invariably to the lymphatic glands, and in some of them to the adjacent organs, liver, gall-bladder, pancreas, omentum and colon. It is the operative treatment of advanced cases of malignant disease that brings so little benefit to the patient and so much disappointment to the surgeon. Asepsis and a greatly improved operative technique have done much to improve the results of operative treatment of malignant tumors, but they have not succeeded in doing away with well recognized restrictions upon the art of surgery to which I now desire to call your attention. There is perhaps, no other department in surgery which presents more diversity of opinions than the selection of cases of malignant tumors for operative treatment.

The conscientious surgeon looks as carefully for contraindications as for indications for radical operations. He is concerned more for the welfare of his patient than his own selfish interests. A prospective liberal fee has no influence in changing his decision. He makes a careful examination of his patient, the tumor and its environments, before he recommends an operation. He has learned from sad experience that aside from justifiable palliative operations for obstructive malignant affections, imperfect operations have proved as detrimental to his patients as to his reputation. He looks the ground over carefully before he decides to attempt a radical operation. The squeezing out of a fixed carcinomatous uterus between forcipressure forceps is not likely to prolong the life of the patient or increase the reputation of the surgeon who ignores to such an extent the limits of the art of surgery. The removal of a carcinomatous breast without a thorough clearing out of the axillary space may increase for the time being the bank account of the operator, but it will surely prove a detriment to the patient. The partial or complete excision of the rectum for carcinoma complicated by regional infection is an operation attended by great immediate risk to life without a ray of hope of effecting a permanent cure. Such bold and reckless overstepping of the limits of the art of surgery is not calculated to increase the estimation of our profession in the eyes of the public or to receive the sanction of the conscientious, discriminating surgeon. The radical removal of a malignant tumor means more than the extirpation of the primary tumor; it means the removal of every malignant cell, whether in the immediate vicinity of the primary growth or in the same region. Evidences of distant metastasis furnish a positive contraindication to operative interference. Regional dissemination beyond the reach of complete removal of every vestige of tumor tissue, local and regional, without imminent risk to life, constitutes an equally forcible argument against a radical operation. Large surface defects made by extensive radical operations should always be covered by a plastic operation or by Thiersch's method of skin grafting. It has always been my aim to cover the wound with skin by either of these methods immediately after the extirpation of the tumor for the purpose of securing healing by the first intention, as I am satisfied that the slow process of healing of large surface defects

by granulation, cicatrization and epidermization is conducive to an early local recurrence.

Surgery of the Three Great Cavities.—The systematic invasion of the three great cavities of the body for the treatment of injury or disease is one of the great triumphs of modern surgery. Our ancestors entertained a well-founded dread for operations which necessitated opening of any of the great serous cavities, knowing from experience their great susceptibility to septic infection. Recent experience has shown that any of these cavities can be opened for diagnostic or therapeutic purposes without much danger provided the operation is performed under strict antiseptic precautions. The prevention of septic complications by asepsis has been the means of creating visceral surgery. The sense of safety in subjecting the different viscera to direct operative treatment which has taken possession of the profession has enlarged to a wonderful extent the field of operative surgery, but it has carried at the same time the work of the ambitious enthusiastic surgeon beyond the limits of his art. Many of the bold attempts upon the organs of the three great cavities are far beyond the legitimate restrictions established by the science of surgery. The mania for achieving new victories outside of the sphere of legitimate rational surgery has neither brought lasting reputation to the adventurers nor benefit to suffering humanity. Many of the new operative procedures remind one more of sensationalism than the product of mature, deep surgical reasoning. The accounts of new operations that are being constantly devised have left operative surgery in a state of confusion. Works on operative surgery that left the press six months ago are obsolete or at least unsatisfactory to-day. The technique of nearly every operation is constantly undergoing changes by the addition of important or unessential modifications. Nearly every surgeon has a flaming desire to connect his name with an instrument of his invention, a new operation or a modification of an old one. A new operation is devised, a case is found upon which it is tried, and if the result is in any way favorable an account of it is sure to find its way promptly into the current medical literature. Many members of the medical profession are willing and ready imitators, who are always anxiously waiting for new discoveries and improvements, ever ready to apply them in their practice without questioning their utility or justifiability. This blind imitation of the practice of others has been the source of great harm to confiding patients and has exerted a powerful inhibitory effect on the true progress of surgery. This is an age of bold surgery. The surgeon who is careful in the selection of his cases, slow and painstaking in his work, need not look for recognition on the part of his students or colleagues; it is the man who lays the abdomen open by a single stroke of his knife, removes two healthy ovaries and closes the incision and returns his patient to her room in seven minutes, who commands the attention of his audience and bears with a self-confident dignity the proud distinction of being a bold and brilliant operator. In calling your attention to the limits of the art of surgery in the treatment of injuries and diseases of the organs contained in the three great cavities, time will only permit to point out a few of the most flagrant transgressions of the established principles of surgery during the last few years.

Surgery of the Skull and Brain.—The use of the

trephine in the treatment of fractures of the skull has had a varied experience since the time of Hippocrates. Trephining of the skull for injuries is one of the oldest operations in surgery. From time to time strong arguments have been made against the indiscriminate operating for fractures of the skull. Stromeier and his followers abandoned the operation of trephining, believing and claiming that the operation resulted in more harm than good to the patient. It is not difficult to conceive that at that time the conversion of a subcutaneous into an open fracture was attended by great risks from infection. The minimizing of the danger from infection by aseptic precautions again brought the trephine into general use not only in the treatment of fractures of the skull, but also in the treatment of pathologic intracranial lesions of a non-traumatic origin. Many surgeons now advocate trephining in all fractures of the cranial vault, claiming that the operation would reduce to a minimum the dangers from remote complications such as obstinate headache, epilepsy and insanity. The question arises, is such a position in consonance with rational surgery? Every surgeon knows that such remote complications after fracture of the skull not subjected to trephining are rather the exception than the rule. It is evident that operative interference in such cases has been carried to extremes. Even under the protection of aseptic precautions, the transformation of a closed into an open fracture of the skull is attended by certain risks which no surgeon can afford to ignore and which must be taken into careful consideration before operative interference is determined upon. This advice applies with special force to the treatment of fractures of the skull in children, as in them spontaneous elevation of the depressed fragment or fragments is frequently observed during the process of repair. There is no rule in surgery without its exceptions, hence the advice to use the trephine in fractures of the skull with depression without regard to the age of the patient or the presence or absence of symptoms, lacks a moral as well as a scientific foundation. The art of surgery has its well-founded limits in the treatment of fractures of the skull. In my opinion, operative interference is absolutely indicated in fractures of the cranial vault under the following circumstances: 1. All open fractures, including gunshot and punctured fractures. 2. Depressed fractures attended by well defined symptoms caused either by the depression or intracranial complications. 3. Rupture of the middle meningeal artery with or without fracture of the skull. The use of the chisel or trephine is superfluous and often harmful in the treatment of subcutaneous fractures of the vault of the skull with or without depression, more especially in the case of children. The operation of trephining in the prevention of remote complications of fracture of the skull is often powerless, owing to the existence of visceral lesions which it can neither remove nor render harmless. The indiscriminate use of the chisel and the trephine in the hands of the inexperienced practitioner is fraught with danger and should not be encouraged by teachers and expert surgeons. Such teachings and practice are in conflict with the correct principles which should govern the true art of surgery. Brain surgery is of recent origin. It is in this department of the operative work of the surgeon that art has gone far in advance of the science of surgery. Cerebral localization and aseptic surgery have made it possible to treat a few intracranial lesions successfully

by direct operative interference. Cerebral localization is in its infancy, and the minutest aseptic precautions do not absolutely protect against infection. A few years ago the columns of the medical press brought glowing accounts of the removal of brain tumors. Patients were exhibited at the meetings of different medical societies with enormous cranial defects and ghastly depressions marking the place from whence a large glioma had been removed successfully. Such cases aroused the most intense attention and interest at the time, but where are they now? Subsequent reports failed to appear, and an ominous silence remains regarding their ultimate fate. Many of the cases of tumor of the brain operated upon who never recovered from the immediate effects of the operation were never reported, and those who were fortunate enough to survive the fearful ordeal, after a longer or shorter interval joined the silent majority. One of the well defined limits of the art of surgery is the operative treatment of malignant tumors of the brain. Tapping and drainage of the lateral ventricles as taught and practiced by Dr. W. W. Keen, may and undoubtedly will become in the future a useful and legitimate surgical resource in the treatment of inflammatory affections of that part of the brain, but so far it has not yielded encouraging results. When Lannelongue devised linear craniotomy for the liberation of the undeveloped imprisoned brain in the skull of infantile idiots, his doctrine was received with open arms by many surgeons who occupy the front rank in the profession. The lay and medical press vied with each other in bringing before the general and medical public the wonderful results following the use of the trephine, chisel and rongeur forceps in opening the skulls of such unfortunate children. Many of these little innocents of course succumbed to the immediate effects of the operation, but this did not subdue the ardor of the surgeon, as he had been instrumental in transferring an object of pity to that happy home where microcephalus is unknown and had relieved the family of a troublesome trust. Where are the cases that have been permanently benefited by the operation? Ask Lannelongue whether his hopes have been realized. I am free to confess that I have never been able to muster my courage to attack the skull of a poor, innocent and yet happy microcephalic child, because I have always regarded the operation as useless in promoting brain development. The responsibility of the surgeon is not limited by the defective mental development of the child nor the importunity of the parents in demanding the operation at all hazards. The surgeon should stand guardian over such a charge, mindful of the limits of the art of surgery. Have we a right to estimate human happiness? The driveling idiot has many enjoyments and pleasures that you and I know nothing about. His responsibilities to God and man are limited and his existence on earth is a long, happy dream, which only ceases when the soul leaves the imperfect body and returns from whence it came, where mental distinction is unknown. The operative removal of inflammatory products from the cranial cavity and the brain has yielded the most satisfactory results, and constitutes one of the most important achievements of modern surgery. This part of cerebral surgery will reach perfection with the progress of cerebral localization, and should be encouraged and cultivated by all who are desirous of extending the present limits of the art of surgery.

Surgery of the Chest.—Modern surgery has done much toward the alleviation and cure of injuries and diseases of the organs of the chest, but it is here also that we are confronted by well defined limitations of the art of surgery. The successful treatment of hydrothorax and empyema of the pleural cavity is the result of a better knowledge of their etiology and pathology and an improved operative technique under strict aseptic precautions. Tapping of the chest for tubercular hydrops followed by iodoform glycerin injection has done more for this class of patients than counter irritation and the internal administration of digitalis, squills, acetate and iodid of potassium. Free incision of the empyemic pleural cavity after resection of one or more ribs, followed by efficient tubular drainage, has become an established practice by almost universal consent. The treatment of chronic empyema with thickened pleura and collapsed adherent lung by Estlander's multiple rib resection or Schede's thoracoplastic operation has yielded brilliant results. The treatment of abscess of the lung by rib resection, free incision with the knife point of the Paquelin cautery and tubular drainage has been the means of saving many a precious life, which, without the aid of the surgeon would have been doomed to a premature death. With few exceptions this is about all that has been accomplished by the surgery of the chest. It is true that a few surgeons have been fortunate enough to cope successfully with a few affections of the heart and its serous investment, the pericardium. Tapping of the pericardium for serous effusion has become one of the established operations in surgery. A very few cases of pyopericardium have been brought to a successful termination by free incision and drainage. We are familiar with isolated cases in which bold surgeons exposed the heart by a free incision for the removal of a foreign body, or sutured a visceral wound, and their effort was crowned by success, but on the whole we are painfully conscious of the fact that the art of surgery has done very little toward the successful treatment of injuries and diseases of this organ. Many have been the efforts of surgeons to supplant the physician in the treatment of pulmonary tuberculosis, the results of such efforts are familiar to you all. In the very nature of things, such trespassing upon the legitimate field of the physician has been followed without exception, by an ignominious failure. It is unfortunate, but true, that the surgical treatment of pulmonary tuberculosis by direct surgical intervention is beyond the present legitimate limits of the art of surgery. Surgery has done very little during the last two decades toward a betterment of the treatment of penetrating stab and gunshot wounds of the chest. The careful surgeon knows that the hermetic sealing under aseptic precautions of the wound of entrance and exit, if such exists, affords the greatest degree of safety in arresting hemorrhage and in preventing septic complications. Free incision of the cavity of the chest with a view of arresting hemorrhage by ligature, or tamponade from any of the organs which it contains is attended by such great immediate risks to life that the possible benefits to be derived from it are more than overbalanced by the immediate dangers which attend such an aggressive course of treatment. The removal of malignant tumors of any of the organs of the chest is beyond the present limits of the art of surgery.

Surgery of the Abdomen.—For reasons that do not

require an explanation here the abdominal cavity was largely a *terra incognita* to the surgeon of less than half a century ago. To-day it is the favorite battleground of the average surgeon and the select field of the so-called abdominal surgeon.

The bold surgery of to-day upon the organs of the abdominal cavity is largely due to the comparative safety with which the peritoneal cavity can be invaded under proper aseptic precautions. This new field for the display of surgical talent and ingenuity has been diligently cultivated in a legitimate way by the honest progressive surgeon, but it has also been made the playground of unscientific sensational surgery by men who are ignorant of the legitimate limits of the art of surgery. The simple fact that any of the abdominal organs, in part or in whole, can be removed successfully without much danger to life does not establish the legitimacy of the surgical procedure. Billroth, one of the greatest, and certainly one of the most honest surgeons of this age, did not realize the expectations he entertained in regard to the benefits to be derived from direct surgical intervention in cases of carcinoma of the stomach, justifying surgical interference. Notwithstanding the wonderful improvements in the technique of operations upon the stomach, partial gastrectomy and pylorotomy have yielded anything but encouraging results. In nearly 50 per cent. the patients subjected to radical treatment for malignant disease of the stomach, succumbed to the immediate effects of the operation. In all of the cases which survived the operative ordeal, the patients succumbed to a relapse in from a few months to several years. I have opened the abdominal cavity for the surgical treatment of malignant disease of the stomach nineteen times, and only in one case did I find the disease limited to the organ primarily affected and in this case the general health of the patient had been so much deteriorated by the obstructive pyloric carcinoma as to contraindicate a radical operation, in all of the remaining patients a pylorotomy or partial gastrectomy was out of the question, as the carcinoma of the pylorus or stomach had extended to adjacent organs or had given rise to regional infection through the lymphatic glands sufficiently to contraindicate any attempts at radical removal of the disease. The legitimate limits of the art of surgery in the treatment of malignant disease of the stomach embrace the cases in which a sufficiently early diagnosis can be made when the malignant disease is limited to the organ primarily involved and the strength of the patient is adequate to overcome the immediate effects of the operation. The removal of the carcinomatous pylorus or any part of the stomach after the malignant disease has extended to adjacent organs or after regional infection through the lymphatic glands and channels has taken place is tampering with the present limits of the art of surgery. The palliative operations for carcinoma of the cardiac and pyloric extremities of the stomach have yielded excellent results, and should receive the sanction of every surgeon who has the best interests of his patients at heart. Witzel's operation for establishing an external gastric fistula in cases of malignant obstructive tumors at the cardiac orifice of the stomach, and Rockwitz-Wölfler's operation for pyloric carcinoma are the palliative operations which promise the most with the least immediate risks to life in all cases of malignant tumors of the stomach which give rise to obstruction. The treatment of intestinal obstruction by surgical inter-

vention has become an established custom. Physicians and surgeons imbued with a proper moral and scientific sense, recognize the importance of early surgical interference in all cases of intestinal obstruction due to mechanical causes. An early positive diagnosis is an essential prerequisite to success in such cases which must be followed by prompt action on the part of the surgeon. Intestinal surgery will celebrate its greatest triumphs with the progressive development of our diagnostic resources in the early recognition of the nature and location of the mechanical causes which give rise to intestinal obstruction. Volvulus and invagination, some of the most serious forms of mechanical obstruction, if they could be recognized within a few hours of their appearance and subjected to surgical treatment at once, would no longer figure so conspicuously in our mortality reports. The division or excision of a constricting band in the treatment of intestinal obstruction from such a source, if performed in time would yield a very small mortality, but if not brought within the present limits of the art of surgery, such cases seldom recover from the immediate effects of the operation.

The radical treatment of malignant tumors of the intestinal canal has not been attended by satisfactory results as a rule. In the majority of cases the operations were postponed until the malignant disease gave rise to symptoms of obstruction, when it was usually found that the carcinoma had passed beyond the legitimate limits of a radical operation. The implication of adjacent organs and extension to the lymphatic glands of the mesentery must be recognized at the present time as positive contraindications to a radical operation. With few exceptions the transgression of this rule in cases in which the patients survived the immediate effects of the operation was followed by an early recurrence of the disease to which the patient rapidly succumbed. Palliative operations in cases of malignant obstruction of the intestinal canal above the rectum, by establishing an anastomotic opening between the intestine above and below the obstruction, have become recognized procedures in surgery. In establishing such a communicating opening, the employment of mechanical devices, such as the metallic buttons of Murphy, Ramaugé and Chaput, which must pass the intestinal canal unchanged, is a procedure fraught with more or less danger, which is being recognized more as the experience with them increases. In my own practice I have largely dispensed with the perforated decalcified bone-plates and now rely more frequently on the needle and thread in performing such operations and the mass of the profession is in accord with this practice. The custom followed by many American surgeons to remove the appendix in all cases in which a diagnosis of appendicitis is made, is a very harmful one. The removal of the appendix should be limited to those cases in which, during the first attack symptoms arise which portend danger to life and relapsing appendicitis. Some cases of appendicitis yield to medical treatment, and in a large percentage of such cases the patients remain free from a second attack. Pancreatic surgery at the present time is limited to the treatment of cysts by establishing and maintaining an abdominal fistula until the cyst becomes obliterated. The extirpation of pancreatic cysts and partial pancreatectomy for malignant disease are operations fraught with danger and do not come within the legitimate limits of the art of surgery at the present time.

Much has been done of late in the way of developing and enlarging the sphere of the surgery of the liver and the biliary tracts. Recent clinical experience and the results of experimental research have shown that a considerable portion of the liver can be removed for injury or disease with a fair expectation of success. The treatment of gunshot and stab wounds of the liver by laparotomy and suturing or tamponing of the visceral wound has yielded encouraging results. A number of successful cases of excision of isolated adenomatous tumors of the liver have enriched and graced our modern surgical literature. The operative removal of malignant tumors of the liver is an undertaking far beyond the present limits of the art of surgery. The successful treatment of abscess of the liver and echinococcus cysts by direct surgical intervention is generally recognized as one of the greatest achievements of abdominal surgery. The pioneer work of Sims and Kocher in laying the foundation for a rational treatment of impacted gallstones in any part of the biliary tracts has yielded unexpected results and has been the means of saving thousands of lives by averting the dangers from perforation and cholemia by a timely surgical intervention. The removal of calculi from the gall bladder can now be accomplished with very little danger to life. The cystic and common duct the seat of an impacted calculus are now exposed and incised, the calculus extracted and the wound sutured or drained, with a well-founded hope that the patient will recover, and that the operation will result in restoring the free flow of bile through the biliary passages. I have reason to believe, however, that the surgery of the biliary passages has been carried too far. That unnecessary operations have been performed upon the gall bladder and the biliary ducts, no one will deny. The simple fact that a patient is suffering from gallstones does not furnish a positive indication for surgical interference. The physician and nature's resources should be given a chance and the surgeon's services should be limited to those cases in which positive indications for operative treatment present themselves. The surgeon who recorded the first successful case of cholecystotomy has since become the victim of gallstones, but instead of calling upon one of his colleagues to open the gall bladder and remove the stones, he made a pilgrimage to Carlsbad and was promptly relieved of his sufferings. Cholecystenterostomy should only be performed in cases in which the common bile duct is permanently occluded by an impacted irremovable gallstone or cicatricial stenosis. Catheterization of the cystic and common bile ducts preceded or followed by dilatation by the use of laminaria tents in the treatment of impacted stones and cicatricial stenosis after the formation of a gall bladder fistula is a much neglected part of the surgery of the biliary passages and of sufficient importance to invite new trials and investigations. For substantial reasons abdominal nephrectomy and nephrotomy have been supplanted by lumbar operations. The treatment of tubercular hydrops of the peritoneum by incision, drainage and iodoformization remains in favor with the profession, and continues to yield the most satisfactory results.

Organs of Generation.—The greatest onslaught of modern surgery has been upon the organs of generation, male and female. It is somewhat strange that the organs created for distinguishing the sex and for the increase of the human species should have been

singled out as innocent objects of so-called modern aggressive surgery. The future historians who will record the work of many gynecologists belonging to the present generation will have reason to express their surprise at what disasters the art of surgery has produced when plied in cases far in advance of a scientific foundation. Here and there we hear a feeble voice protesting against the indiscriminate surgery upon the organs of generation of the opposite sex, but the mutilating work continues in spite of such opposition and well-meant advice. Every competent and honest gynecologist knows that in his sphere the art of surgery has been thoroughly abused. It is difficult to assign tangible reasons for such a fearful state of things. It appears to belong to the spirit of the present generation, the outcome of ceaseless unrest in pelvic surgery. When I arraign the gynecologists before this body composed of representative medical men of this country for innumerable and inexcusable transgressions of the rules which ought to govern and control the art of surgery, I do not include the scientific, honest, conscientious workers in that department of surgery, but my remarks will apply to a class of routine operators which has recently grown to alarming dimensions not only in this but in nearly every country which has been penetrated by the dim rays of so-called bold surgery. It is a subject that I would gladly pass over in silence, but you have imposed upon me a trust which I can not ignore and I stand here in the capacity of the conservative element in these days of wild, unfounded surgery to place myself on record in protesting against the unnecessary mutilation of the sexual organs of either sex, willing to stand or fall by the sentiments of the great mass of general practitioners, which after all must be regarded as the backbone and final tribunal of our profession. The new generation of doctors finds no longer satisfaction in practicing their profession in some rural district. The young practitioners have their eyes on large cities and have heard of enticing fees paid to specialists for insignificant operations. Why buy a horse and saddlebags when a fortune awaits them in devoting themselves to a specialty, more particularly gynecology? The recent graduate or the man who has become disgusted with country practice seeks a much employed gynecologist, follows his work for a month or two and returns to his prospective field of labor a full-fledged specialist. He is now ready to extirpate the uterus, remove ovaries and Fallopian tubes, sew imaginary lacerations of the cervix and perineum. Do you suppose that such an aspirant for gynecologic fame ever examines a woman and finds her perfect? Is it not true that in nine out of ten cases he finds something to mend? That my views are real and not visionary let me relate a few instances. A number of years ago a young lady accompanied by her grandmother applied to me for treatment for a neurasthenic affection. I was informed by the grandmother that a few days before they had consulted a young gynecologist, who made a hasty vaginal examination, looked wise and informed them that he had found the source of all trouble in the form of a laceration of the cervix, which would require an operation. As a matter of course the grandmother asked for an explanation of the injury and was promptly informed that it was one of the common accidents of childbirth. As the patient was unmarried and had never been pregnant this explanation proved unsatisfactory to the interested parties and no arrangements were made for

the prospective trachelorrhaphy—upon a virgin uterus. Not long ago an unmarried woman came under my care who had been told by an ambitious gynecologist that she was suffering from a myoma of the uterus which would necessitate a vaginal hysterectomy. I found a sharp antelexion, the anterior wall of the uterus being prominent and somewhat edematous had been mistaken for a tumor and nothing short of a hysterectomy would satisfy the operator. This patient recovered under conservative treatment without the loss of an important organ. The cases which I have just cited escaped mutilating operations by doubting the diagnosis of those to whom they first applied for treatment; others are less fortunate. Suffering woman will believe in and submit to almost everything. In fact it has become almost a fashion for women suffering from real or imaginary affections of the genital organs to consult a gynecologist as regularly as her dentist or dressmaker. Not long ago a girl 18 years of age was brought to me with the information that she became epileptic when 7 years of age, that later, when menstruation was established, the attacks never occurred during the menstrual period, and yet both of her ovaries were removed by a gynecologist. As could be expected, the epilepsy remained and when I saw her she was on the verge of insanity. Time does not permit to cite additional illustrations showing criminal trespass upon the legitimate limits of the art of surgery in the treatment of real or imaginary ailments of the female organs of generation. Every practitioner has seen such instances as I have cited above. Has humanity been the gainer since the gynecologists became surgeons? This is a timely and serious question. Is the average woman who has passed through the hands of one or more gynecologists physically and mentally in a better condition than our mothers of fifty years ago, whose ovaries were safe and who knew but little about speculums and vaginal douches? Let the older members of our Association answer this question. When the venerable and distinguished Emmet devised his operation for laceration of the cervix he pointed out clearly what conditions called for and were benefited by trachelorrhaphy. The operation was received with enthusiasm and everyone present here knows how much it has been misapplied. It is safe to assert that not one in ten cases that have been operated upon was the operation justifiable or proved of any benefit to the patient. Emmet's teachings and practice were in consonance with sound pathologic principles but hundreds of imitators were less discriminating in the selection of cases, and performed the operation simply because they found a laceration of the cervix, irrespective of the existence of symptoms which could be referred to this condition. Laceration of the perineum is another favorite subject of the "amateur" gynecologist. The extent of laceration and the symptoms caused by it are not always taken into careful consideration in deciding upon the propriety of an operation. To "do a perineum" in five or seven minutes still serves as an attraction for the lookers-on in many private hospitals and gynecologic clinics. I fully appreciate the value of a well-performed perineorrhaphy in proper cases, but I am equally well satisfied that the operation has often been performed unnecessarily, and that it requires more than five or seven minutes to perform it properly. The late lamented Robert Battey opened a wide field for operative gynecology. This modest, honest worker conceived the idea that the removal of

the normal ovaries would become a useful surgical resource in the treatment of certain nervous affections which before had baffled the skill of physicians. It required some time and the additional support of Hegar and Tait for his views to become popular among his colleagues. Battey lived long enough to learn that his example and teachings have created a wave in the misapplication of the art of surgery which to-day remains mountain high, and it is difficult to tell where it will end or where a rock sufficiently high and strong will be found to break its force. The frequency with which women are being castrated to-day is one of the most flagrant transgressions of the limits of the art of surgery. It is not unusual for one operator to exhibit from five to six normal ovaries as the result of half a day's work. All kinds of excuses are made for this kind of surgery. The ovaries are too large, cirrhotic, cystic, or perchance a ruptured Graafian follicle is discovered, when he consoles himself that he has removed an apoplectic ovary. Where is this wholesale unsexing of our female population going to end? The beginning of the end has come. The army of women minus their essential organs of generation is beginning to raise its voice against such mutilating work. The number of women who willingly sacrificed their ovaries to restore their shattered health without securing the expected relief has increased to an alarming extent. This sad experience has made the gynecologists more desperate and bold. They have been importuned by their castrated, tubeless patients to such an extent that the art of surgery was again resorted to. The uterus, which heretofore had been comparatively safe, was now selected as the offending body, and vaginal hysterectomy became at once a popular operation. Many atrophic uteri remaining after removal of their appendages have been removed in a vain hope of securing permanent relief. Vaginal hysterectomy for diseases other than carcinoma is now at its height. The uterus is being removed for hypertrophy, endometritis, flexion, version and minute myofibromata. This important organ is no longer safe if it is in the vicinity of a pelvic abscess. Perchance a healthy uterus is removed under the pretense of securing a more direct route to a focus or foci of pelvic inflammation. It is needless to say that most of the surgeons who clamor for the removal of the uterus through the vagina for insignificant affections or inflammatory lesions of adjacent parts, do so by the use of compression forceps. It is no great surgical feat to squeeze out an inflamed or displaced uterus between compression forceps. It is difficult to say where this rage for the removal of the female sexual organs will end or what organ will be the next battle ground for the aggressive gynecologists. The clitoris, the vagina, the cervix uteri, the ovaries, the Fallopian tubes, the uterus and its ligaments have successively passed through a trying ordeal of the *furor operativus*. What the next fad will be is impossible to foretell. As one operation after another is falling into a well deserved desuetude new ones will have to be devised to gratify the whims of the patients and the ambitions of the gynecologist. I have portrayed to you only a few of the excesses of the art of surgery as applied to the female organs of generation, but enough has been said to show you that it is time to call a halt. Further depredations can best be avoided by the general practitioners to whom most of the patients first apply for relief. Let them do their duty toward their patients. Many of the minor affec-

tions of the uterus and its appendages are within the reach of intelligent general and local treatment without a recourse to the knife. If gynecology is to live and become a real benefit to women suffering from pelvic disease, it must become more conservative. We all appreciate what surgery has done in prolonging life and in mitigating suffering in the treatment of ovarian cysts and the removal of the uterus, the seat of symptom-producing myofibromata. What I am objecting to, and on good ground, is the indiscriminate operating upon the female organs of generation for imaginary or insignificant affections. This is an evil that must be apparent to all and that the leaders of gynecology must assist us to suppress.

I can not dismiss the subject of genital surgery without making a strong plea in favor of conservatism in the treatment of prostatic hypertrophy. A few years ago J. W. White made a series of experiments on dogs which proved that the testicles possessed an influence which, to a certain degree, controlled the nutrition of the prostate gland. His experiments were made on dogs, the animals being vigorous and in full possession of their sexual power. He found that castration was constantly followed by progressive atrophy of the prostate gland. At that time he timidly suggested that castration in cases of prostatic hypertrophy might possibly prove to be a valuable surgical resource in the treatment of urinary obstructions due to such a cause. About the same time Ramm gave the result of his clinical experience, covering about the same ground, urging the utility of castration as a legitimate surgical procedure in the treatment of non-malignant obstructive enlargement of the prostate, a condition so frequently met with in men advanced in years. You are familiar with the subsequent history of this operation. Numerous operations have been performed in different countries which appear to support the claims made for it by both of these investigators. The operation has been modified in substituting for the castration section or resection of the vas deferens, and recently neurectomy of the spermatic nerves; both of these procedures are said to produce the same curative effect as castration. A sufficient clinical material has accumulated to prove that these different procedures frequently result in diminution in the size of the prostate and that the symptoms caused by the obstruction often diminish or disappear.

I can readily understand in what manner emasculation in young animals and young and middle-aged men should be followed by atrophy of the healthy prostate gland. Castration of women during active sexual life will bring about atrophy of the uterus as a constant result. Clinical experience has also shown that the anticipated menopause effected by castration has a decided effect on the myomatous uterus. But who would think of castrating a woman who has reached the menopause for such an indication? It is very difficult to understand how castration or its substitutes performed on men advanced in years, with atrophic dormant testicles should exert such a positive influence upon an organ, the seat of a senile affection. And yet, the fact remains that many reliable men have observed such results, and we can no longer doubt them.

What I fear, and the reason I allude to this subject, is this, that castration of aged men for hypertrophy of the prostate, when this operation becomes common property and is endorsed by surgeons who stand high in the estimation of the profession, will be misap-

plied in the same way, fortunately, probably to a lesser extent than the removal of normal ovaries. Men will be castrated for stone in the bladder, chronic cystitis and malignant disease of the bladder. It is not always easy nor possible to make a positive differential diagnosis between simple hypertrophy of the prostate and some of the conditions which simulate it so closely. In doubtful cases it appears to me it would certainly be advisable to make the diagnosis sure by a supra-pubic cystotomy before resorting to a mutilating operation, rather than remove the testicles and later discover a tubercular bladder or encysted stone or malignant disease of the bladder or prostate. Castration is such an easy operation that every tyro in surgery will be tempted to perform it upon willing subjects suffering from obscure affections of the bladder, complicating hypertrophy of the prostate gland. The Ramm-White operation deserves a fair trial at the hands of competent surgeons, in well selected cases, but I apprehend evil in the future, not so much from the proper use as the abuse of this procedure. In short, it is probable that this new surgical resource, which has not yet passed the trial stage of a legitimate established surgical procedure, will on a smaller scale become a repetition of the unenviable history of castration of the opposite sex. We have every reason to believe that so far the apparently successful cases have found their way into current medical literature, while the cases in which the operation has proved a failure, with few exceptions, have for apparent reasons not been published.

Gentlemen: It has been my purpose to call your attention in the brief time allotted to the delivery of this address to some of the limits of the art of surgery and to a few of the most flagrant prevalent trespasses of its legitimate limits by indiscriminating surgeons. I wish time would permit me to say something of the too frequent recourse to the recently revived operation of symphyseotomy and the unwarranted procedure known as Porro's operation, except in cases in which the uterus is the seat of a life-threatening affection, some of the evil results following the too frequent performance of ventro-fixation of the retroverted uterus, and many other topics in general surgery and gynecology to which no allusion has been made, where the limits of the art of surgery have been ignored, and too often reckless operating has disgraced the fair fame and reputation of our noble profession. Let us have in the future more of the *nil nocere* in place of the *furor operativus*. I have written and delivered this address with malice toward none, in the interest of the suffering portion of our population, for the true advancement of the science and art of surgery, and as a plea for recognition of the good work done by the great mass and backbone of our profession, the modest, toiling, inadequately remunerated general practitioner.

Benefactions to Boston Charities.—By the death of an heir the public bequests under the will of Mrs. Josiah Vose, of Boston, Mass., became operative and more than \$380,000 is released to many of the more prominent educational and charitable institutions in Boston. These bequests are: Massachusetts General Hospital, \$30,000; McLean Asylum, \$30,000; Institute of Technology, \$25,000; Female Orphan Asylum, \$15,000; New England Hospital for Women and Children, \$25,000; Institution for the Blind, \$10,000; Eye and Ear Infirmary, \$15,000, and Home for Colored Women, \$5,000.

ADDRESS ON THE CHARACTER OF DR. EDWARD JENNER AND THE HISTORY OF HIS DISCOVERY OF THE PROTECTIVE VALUE OF VACCINATION.

Read at the Centennial Anniversary, Atlanta, Ga., May, 1896.

BY N. S. DAVIS, M.D., LL.D.

CHAIRMAN COMMITTEE, CHICAGO, ILL.

According to reliable authorities the subject of this address, Edward Jenner, was a native of Berkeley, in Gloucestershire, England. He was born May 17, 1749. His father was Rev. Stephen Jenner, who was rector of Rockhampton and vicar of Berkeley. He was the representative of an honorable family long established and owning some landed property in that county. His mother belonged to an ancient family in Berkshire. The father died when Jenner was only 6 years old, thereby leaving the care and education of Edward almost wholly to his older brother, Rev. Stephen Jenner, who appears to have assumed and executed all the parental duties relating to the younger brother with the utmost fidelity and tenderness. The early education of Edward was in the schools, chiefly at Wotton-under-Edge and Cirencester. During this time he developed so much fondness for natural history as to attract special attention, yet he was never behind in any other studies required. At the age of 14 it was decided that his further education should have direct reference to his entering the medical profession. Consequently he was apprenticed to Mr. Daniel Ludlow, a surgeon at Sudbury, near Bristol, for the purpose of studying surgery and pharmacy. It was during this apprenticeship that he heard a young woman, a milkmaid of the neighborhood, say to Surgeon Ludlow that she could not have the smallpox because she had previously had a cowpox sore on her hand contracted while milking. The remark was such as to indicate a prevalent belief among some of those engaged in milking, that there sometimes existed on the udders of the cow a sore or pustule the matter from which, if placed in contact with an abrasion on the hand of the milker, produced a peculiar sore, leaving a permanent scar and rendering him or her ever after immune to the contagion of smallpox. No attention was given to the remark by the surgeon, who like all his confrères regarded it either a mere accidental occurrence, or a superstitious vagary of the common people. But it was far otherwise with his young apprentice, Edward Jenner.

Endowed with the highest order of mental acumen, coupled with an equally high order of benevolence, and already trained to philosophical study, the simple remark of the milkmaid at once and indelibly fixed in his mind the question whether it did not point to a possible preventive of that most dreaded scourge of the human race, smallpox. Jenner never abandoned the idea of solving the question until he had completed its solution thirty years later. But with no accurate description of the alleged infectious sore or pustule on the cow's udder, and the fact that it was met with only at irregular intervals, he was limited during his apprenticeship to the gathering of such items of information bearing on the subject as might come within his reach. In the meantime he not only pursued his studies in surgery and pharmacy with diligence, but he seems to have devoted every available hour to further studies in natural history directly in the open field of nature, observing the habits of liv-